

PARASITOLOGY

PARASITOLOGY

(Founded by G. H. F. Nuttall, F.R.S.)

EDITORS

F. E. G. COX *and* P. J. WHITFIELD

EDITORIAL ASSISTANT

M. ELISABETH PAINTER, Ph.D.

ADVISORY BOARD

L. G. GOODWIN, F.R.S. (*Chairman*)

R. ANDERSON

C. ARME

J. R. BAKER

J. BARRETT

A. E. BUTTERWORTH

ELIZABETH U. CANNING

L. H. CHAPPELL

S. COHEN, F.R.S.

D. W. T. CROMPTON

G. A. M. CROSS, F.R.S.

D. A. ERASMUS

N. A. EVANS

D. I. GIBSON

L. P. JOYNER*

C. R. KENNEDY

ANN M. LACKIE

D. L. LEE

J. LLEWELLYN

B. A. NEWTON

BRIDGET M. OGILVIE

M. ELAINE ROSE

J. F. RYLEY

S. R. SMITHERS

K. VICKERMAN, F.R.S.

D. WAKELIN

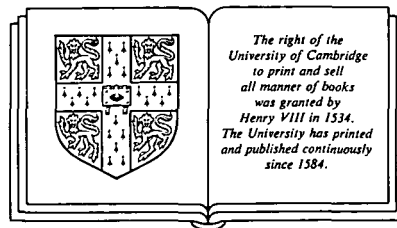
P. F. V. WARD

H. H. WILLIAMS

R. A. WILSON

* Representing the British Society for Parasitology.

VOLUME 90, 1985



CAMBRIDGE UNIVERSITY PRESS

CAMBRIDGE

LONDON NEW YORK NEW ROCHELLE

MELBOURNE SYDNEY

Published by the Press Syndicate of the University of Cambridge
The Pitt Building, Trumpington Street, Cambridge CB2 1RP
32 East 57th Street, New York, NY 10022
10 Stamford Road, Oakleigh, Melbourne 3166, Australia

© Cambridge University Press, 1985

Printed in Great Britain by the
University Press, Cambridge

CONTENTS

(All rights reserved)

PART 1 FEBRUARY 1985

PAGE

GUZO, D. and STOLTZ, D. B. Obligatory multiparasitism in the tussock moth, <i>Orgyia leucostigma</i>	1
CANNING, ELIZABETH U., BARKER, ROSALIND J., PAGE, A. M. and NICHOLAS, J. P. Transmission of microsporidia, especially <i>Orthosoma operophterae</i> (Canning, 1960) between generations of winter moth <i>Operophtera brumata</i> (L.) (Lepidoptera: Geometridae)	11
DE CASTRO, J. J., CUNNINGHAM, M. P., DOLAN, T. T., DRANSFIELD, R. D., NEWSON, R. M. and YOUNG, A. S. Effects on cattle of artificial infestations with the tick <i>Rhipicephalus appendiculatus</i>	21
CORNELISSEN, A. W. C. A. and OVERDULVE, J. P. Sex determination and sex differentiation in coccidia: gametogony and oocyst production after monoclonal infection of cats with free-living and intermediate host stages of <i>Isopora (Toxoplasma) gondii</i>	35
HUDSON, A. T., RANDALL, A. W., FRY, M., GINGER, C. D., HILL, B., LATTER, V. S., MCHARDY, N. and WILLIAMS, R. B. Novel anti-malarial hydroxynaphthoquinones with potent broad spectrum anti-protozoal activity	45
SCHLEIN, Y., POLACHEK, I. and YUVAL, B. Mycoses, bacterial infections and antibacterial activity in sandflies (Psychodidae) and their possible role in the transmission of leishmaniasis	57
WALLBANKS, K. R., MAAZOUN, R., CANNING, E. U. and RIOUX, J. A. The identity of <i>Leishmania tarentolae</i> Weynon 1921	67
BARRY, J. D., CROWE, J. S. and VICKERMAN, K. Neutralization of individual variable antigen types in metacyclic populations of <i>Trypanosoma brucei</i> does not prevent their subsequent expression in mice	79
TAIT, A., BARRY, J. D., WINK, R., SANDERSON, A. and CROWE, J. S. Enzyme variation in <i>T. brucei</i> spp. II. Evidence for <i>T.b. rhodesiense</i> being a set of variants of <i>T.b. brucei</i>	89
STURROCK, R. F., COTTRELL, B. J., MAHMOUD, A. A. F., CHEDID, L. and KIMANI, R. Attempts to induce resistance to <i>Schistosoma mansoni</i> and <i>S. haematobium</i> in Kenyan baboons (<i>Papio anubis</i>) using non-specific immunostimulants	101
MCMANUS, D. P. and BARRETT, N. J. Isolation, fractionation and partial characterization of the tegumental surface from protoscolexes of the hydatid organism, <i>Echinococcus granulosus</i>	111
WALKER, R. W. and BARRETT, J. Mitochondrial membrane fluorescence and temperature adaptation in <i>Schistocephalus solidus</i> (Cestoda: Pseudophyllidea)	131
CURRAN, J., BAILLIE, D. L. and WEBSTER, J. M. Use of genomic DNA restriction fragment length differences to identify nematode species	137

FRY, M. and BEESLEY, J. E. Cytochemical localization of cytochrome oxidase in tissues of parasitic nematodes.	145
ASH, CAROLINE, CROMPTON, D. W. T. and LUNN, P. G. Impact of <i>Nippostrongylus brasiliensis</i> (Nematoda) on the serum albumin and amino acid concentrations of rats fed adequate or protein-deficient diets	157
ONWULIRI, C. O. E. Energy metabolism in the developing larval stages of <i>Ancylostoma tubaeforme</i> and <i>Haemonchus contortus</i> : glycolytic and tricarboxylic acid cycle enzymes	169
WRIGHT, E. J. and SOMMERVILLE, R. I. Structure and development of the spermatozoon of the parasitic nematode, <i>Nematospiroides dubius</i>	179
HALTON, D. W. and MCCRAE, J. M. Development of the tegument and alimentary tract in a digenetic trematode, <i>Fellodistomum fellis</i>	193

Trends and Perspectives

MINCHELLA, D. J. Host life-history variation in response to parasitism	205
--	-----

PART 2 APRIL 1985

GABALDON, A., ULLOA, G. and ZERPA, N. <i>Fallisia (Plasmodioides) neotropicalis</i> subgen.nov. sp.nov. from Venezuela	217
OUAISSI, M. A., DUTOIT, E., VERNES, A., GUERRET-STOCKER, S. and CAPRON, A. <i>In vitro</i> inhibition of <i>Plasmodium falciparum</i> merozoite invasion by human plasma fibronectin	227
WILLIAMS, R. B. <i>Plasmodium gallinaceum</i> and subsequent <i>Eimeria acervulina</i> infections in chickens are not synergistic	237
MILLOTT, STEPHANIE M. and COX, F. E. G. Interactions between <i>Trypanosoma brucei</i> and <i>Babesia</i> spp. and <i>Plasmodium</i> spp. in mice	241
WHITELAW, D. D., MOULTON, J. E., MORRISON, W. I. and MURRAY, M. Central nervous system involvement in goats undergoing primary infections with <i>Trypanosoma brucei</i> and relapse infections after chemotherapy	255
EVANS, N. A. The influence of environmental temperature upon transmission of the cercariae of <i>Echinostoma liei</i> (Digenea: Echinostomatidae)	269
MATTHEWS, P. M., MONTGOMERY, W. I. and HANNA, R. E. B. Infestation of littorinids by larval Digenea around a small fishing port	277
JONES, JANET J. and KUSEL, J. R. The inheritance of responses to schistosomiasis <i>mansoni</i> in two pairs of inbred strains of mice	289
BICKLE, Q. D., ANDREWS, B. J., DOENHOFF, M. J., FORD, M. J. and TAYLOR, M. G. Resistance against <i>Schistosoma mansoni</i> induced by highly irradiated infections: studies on species specificity of immunization and attempts to transfer resistance	301
MOLONEY, N. A., BICKLE, Q. D. and WEBBE, G. The induction of specific immunity against <i>Schistosoma japonicum</i> by exposure of mice to ultraviolet attenuated cercariae	313

BICKLE, Q. D. and ANDREWS, B. J. Resistance following drug attenuation (Ro 11-3128 or oxamniquine) of early <i>Schistosoma mansoni</i> infections in mice	325
MERCER, J. G. and CHAPPELL, L. H. <i>Schistosoma mansoni</i> : effect of maintenance <i>in vitro</i> on the physiology and biochemistry of adult worms	339
BASCHONG, WERNER. Changes in the surface of <i>Dipetalonema viteae</i> (Filarioidea) during its development as shown by comparative peptide mapping	351
NICHOLLS, C. D., LEE, D. L. and SHARPE, M. J. Scanning electron microscopy of biopsy specimens removed by a colonoscope from the abomasum of sheep infected with <i>Haemonchus contortus</i>	357
RICHARDS, K. SYLVIA and ARME, C. Phagocytosis of microvilli of the metacestode of <i>Hymenolepis diminuta</i> by <i>Tenebrio molitor</i> haemocytes	365
KENNEDY, C.R. Site segregation by species of Acanthocephala in fish, with special reference to eels, <i>Anguilla anguilla</i>	375
YOUNG, A. S., DE CASTRO, J. J., BURNS, CASEY and MURPHY, D. L. Potential of ear tags impregnated with acaricides for control of the brown ear tick (<i>Rhipicephalus appendiculatus</i>) infesting cattle	391
CHIERA, J. W., NEWSON, R. M. and CUNNINGHAM, M. P. Cumulative effects of host resistance on <i>Rhipicephalus appendiculatus</i> Neumann (Acarina: Ixodidae) in the laboratory	401

PART 3 JUNE 1985

ALI, J. H. and RILEY, J. The distribution of cephalic sense organs in four species of <i>Raillietiella</i> (Pentastomida: Cephalobaenida)	411
GORDON, D. M. and WHITFIELD, P. J. Interactions of the cysticercoids of <i>Hymenolepis diminuta</i> and <i>Raillietina cesticillus</i> in their intermediate host, <i>Tribolium confusum</i>	421
JAYABASKARAN, C. and RAMALINGHAM, K. Characterization of phenol oxidase in a pseudophyllidean cestode <i>Penetrocephalus ganapatii</i>	433
CHERNIN, J. and MORINAN, A. Analysis of six serum components from rats infected with tetrathyridia of <i>Mesocestoides corti</i>	441
CROMPTON, D. W. T., ARNOLD, S. E., WALTERS, D. E. and WHITFIELD, P. J. Food intake and body weight changes in mice infected with metacestodes of <i>Taenia crassiceps</i>	449
WONG, M. S. and BUNDY, D. A. P. Population distribution of <i>Ochoterenella digiticauda</i> (Nematoda: Onchocercidae) and <i>Mesocoelium monas</i> (Digenea: Brachycoeliidae) in natural infected <i>Bufo marinus</i> (Amphibia: Bufonidae) from Jamaica	457
BUNDY, D. A. P., FOREMAN, J. D. M. and GOLDEN, M. H. N. Sodium azide preservation of faecal specimens for Kato analysis	463
FOX, P. C. and ATKINSON, H. J. Immunochemical studies on pathotypes of the potato cyst nematodes, <i>Globodera rostochiensis</i> and <i>G. pallida</i>	471
HO, JU-SHEY. Copepod parasites of deep-sea benthic fishes from the western North Atlantic	485

SIMPSON, A. J. G., KNIGHT, M., HAGAN, P., HODGSON, J., WILKINS, H. A. and SMITHERS, S. R. The schistosomulum surface antigens of <i>Schistosoma haematobium</i>	499
VERWAERDE, CLAUDIE, AURIAULT, C., DAMONNEVILLE, MARTINE, GRZYCH, J.-M., PIERCE, R. and CAPRON, A. IgG response of rats and humans to the released products of schistosomula of <i>Schistosoma mansoni</i>	509
MASTIN, AVIS J., WILSON, R. A. and BICKLE, Q. D. Induction of resistance to <i>Schistosoma mansoni</i> in mice by chemotherapy: migration of schistosomula in primary and challenge infection	519
MCCALLUM, H. I. Population effects of parasite survival of host death: experimental studies of the interaction of <i>Ichthyophthirius multifiliis</i> and its fish host	529
MOLNÁR, KÁLMÁN and KOVÁCS-GAYER, ÉVA. The pathogenicity and development within the host fish of <i>Myxobolus cyprini</i> Doflein, 1898	549
ROSE, M. ELAINE and MILLARD, B. J. Host specificity in eimerian coccidia: development of <i>Eimeria vermiformis</i> of the mouse, <i>Mus musculus</i> , in <i>Rattus norvegicus</i>	557
McKENZIE, M. E., JOHNSON, JOYCE and LONG, P. L. Lethality of intestinal tissue extracts from <i>Eimeria</i> -infected chickens	565
WEDDERBURN, NINA, MITCHELL, G. H. and DAVIES, D. R. <i>Plasmodium brasili- anum</i> in the common marmoset <i>Callithrix jacchus</i>	573
SLOMIANNY, C., PRENSIER, G. and CHARET, P. Ingestion of erythrocyte stroma by <i>Plasmodium chabaudi</i> trophozoites: ultrastructural study by serial sectioning and 3-dimensional reconstruction	579
<i>Trends and Perspectives</i>	
MUTETWA, S. M. and JAMES, E. R. Low temperature preservation of <i>Plasmodium</i> spp.	589
BOOK REVIEWS	605
CORRIGENDUM	611

PARASITOLOGY

BACK VOLUMES. Vols. 1–39: Inquiries should be addressed to Wm. Dawson & Sons Ltd, Cannon House, Folkestone, Kent. Vols. 40 onwards: quotations for parts still in print may be obtained from the Cambridge or New York offices of the Cambridge University Press.

COPYING. This journal is registered with the Copyright Clearance Center, 21 Congress Street, Salem, Mass. 01970. Organizations in the USA who are also registered with C.C.C. may therefore copy material (beyond the limits permitted by sections 107 and 108 of US copyright law) subject to payment to C.C.C. of the per-copy fee of \$05.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 0031–1820/85/0080–0001 \$05.00.

ISI TEAR SERVICE, 3501 Market Street, Philadelphia, Pennsylvania 19104, USA, is authorized to supply single copies of separate articles for private use only.

FOR ALL OTHER USE, permission should be sought from the Cambridge or New York offices of the Cambridge University Press.

CLAIMS for missing issues can only be considered if made immediately after receipt of the subsequent issue.

ADVERTISING. Details of advertising in *Parasitology* may be obtained from the publisher.

PARASITOLOGY

Volume 90, Part 3, June 1985

CONTENTS

PAGE

ALI, J. H. and RILEY, J. The distribution of cephalic sense organs in four species of <i>Raillietiella</i> (Pentastomida: Cephalobaenida)	411
GORDON, D. M. and WHITFIELD, P. J. Interactions of the cysticercoids of <i>Hymenolepis diminuta</i> and <i>Raillietina cesticillus</i> in their intermediate host, <i>Tribolium confusum</i>	421
JAYABASKARAN, C. and RAMALINGAM, K. Characterization of phenol oxidase in a pseudo-phyllidean cestode <i>Penetrocephalus ganapatii</i>	433
CHERNIN, J. and MORINAN, A. Analysis of six serum components from rats infected with tetrathyridia of <i>Mesocestoides corti</i>	441
CROMPTON, D. W. T., ARNOLD, S. E., WALTERS, D. E. and WHITFIELD, P. J. Food intake and body weight changes in mice infected with metacestodes of <i>Taenia crassiceps</i>	449
WONG, M. S. and BUNDY, D. A. P. Population distribution of <i>Ochoterenella digiticauda</i> (Nematoda: Onchocercidae) and <i>Mesocoelium monas</i> (Digenea: Brachycoeliidae) in naturally infected <i>Bufo marinus</i> (Amphibia: Bufonidae) from Jamaica	457
BUNDY, D. A. P., FOREMAN, J. D. M. and GOLDEN, M. H. N. Sodium azide preservation of faecal specimens for Kato analysis	463
FOX, P. C. and ATKINSON, H. J. Immunochemical studies on pathotypes of the potato cyst nematodes, <i>Globodera rostochiensis</i> and <i>G. pallida</i>	471
HO, JU-SHEY. Copepod parasites of deep-sea benthic fishes from the western North Atlantic	485
SIMPSON, A. J. G., KNIGHT, M., HAGAN, P., HODGSON, J., WILKINS, H. A. and SMITHERS, S. R. The schistosomulum surface antigens of <i>Schistosoma haematobium</i>	499
VERWAERDE, CLAUDIE, AURIAULT, C., DAMONNEVILLE, MARTINE, GRZYCH, J.-M., PIERCE, R. and CAPRON, A. IgG response of rats and humans to the released products of schistosomula of <i>Schistosoma mansoni</i>	509
MASTIN, AVIS J., WILSON, R. A. and BICKLE, Q. D. Induction of resistance to <i>Schistosoma mansoni</i> in mice by chemotherapy: migration of schistosomula in primary and challenge infections	519
MCCALLUM, H. I. Population effects of parasite survival of host death: experimental studies of the interaction of <i>Ichthyophthirius multifiliis</i> and its fish host	529
MOLNÁR, KÁLMÁN and KOVÁCS-GAYER, ÉVA. The pathogenicity and development within the host fish of <i>Myxobolus cyprini</i> Doflein, 1898	549
ROSE, M. ELAINE and MILLARD, B. J. Host specificity in eimerian coccidia: development of <i>Eimeria vermiformis</i> of the mouse, <i>Mus musculus</i> , in <i>Rattus norvegicus</i>	557
MCKENZIE, M. E., JOHNSON, JOYCE and LONG, P. L. Lethality of intestinal tissue extracts from <i>Eimeria</i> -infected chickens	565
WEDDERBURN, NINA, MITCHELL, G. H. and DAVIES, D. R. <i>Plasmodium brasilianum</i> in the common marmoset <i>Callithrix jacchus</i>	573
SLOMIANNY, C., PRENSIER, G. and CHARET, P. Ingestion of erythrocyte stroma by <i>Plasmodium chabaudi</i> trophozoites: ultrastructural study by serial sectioning and 3-dimensional reconstruction	579
<i>Trends and Perspectives</i>	
MUTETWA, S. M. and JAMES, E. R. Low temperature preservation of <i>Plasmodium</i> spp.	589
BOOK REVIEWS	605
CORRIGENDUM	611

© Cambridge University Press 1985

The Pitt Building, Trumpington Street, Cambridge CB2 1RP
32 East 57th Street, New York, NY 10022, USA
10 Stamford Road, Oakleigh, Melbourne 3166, Australia

Printed in Great Britain by the University Press, Cambridge